Annotated Sheet Showing Changes

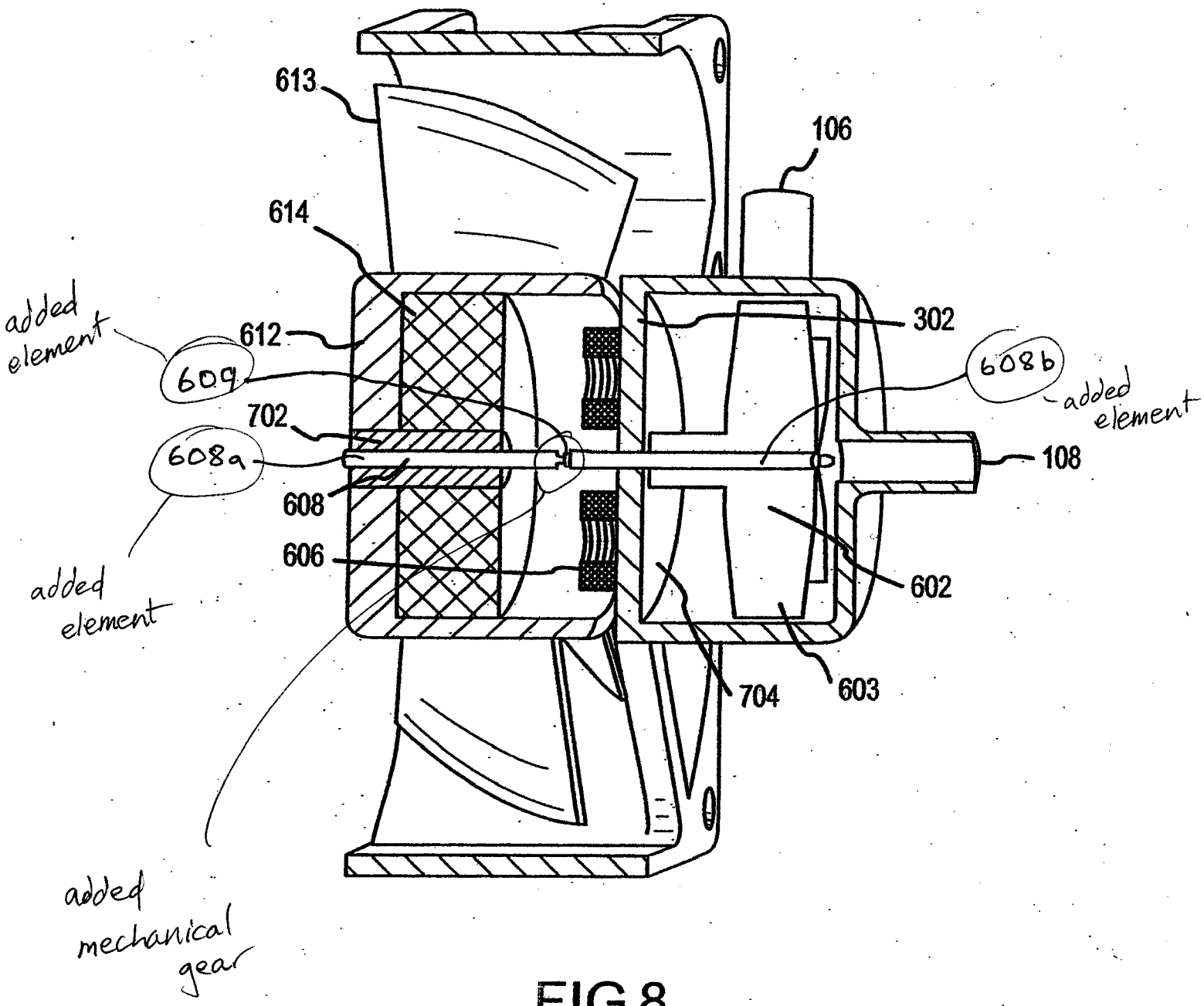

FIG.8

REMARKS

Drawings Objections

The Office Action objects to the drawings under 37 C.F.R. § 1.83(a) as failing to show every feature of the invention specified in the claims. In response, Applicants have amended FIGS. 6 and 8.

In FIG. 6, the drawing is modified to show the mechanical gear of claim 1. Furthermore, elements 608a, 608b, and 609 have been added to FIG. 6. The specification has been modified to make reference to the new drawing elements.

In FIG. 8, the drawing is modified to show the mechanical gear of claim 1. Furthermore, elements 608a, 608b, and 609 have been added to FIG. 8. The specification has been modified to make reference to the new drawing elements.

Accordingly, Applicants respectfully submit that the drawings satisfy 37 C.F.R. § 1.83(a) and that the objection should be withdrawn.

112 rejections

The Office Action rejects claims 1, 11-14, and 18-20 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Office Action states that the "claim(s) contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention." Specifically, the Examiner states that there is insufficient support for the "phase change device" of claims 1 and 11.

In response, Applicants have amended claim 1 to remove the

"phase change device coupled to said pump" element. Applicants have cancelled claims 11-14, and 18-20. Accordingly, Applicants submit the 112 rejection is rendered moot and should be withdrawn.

103(a) Rejections

The Office Action rejects claims 24, 27, and 30 under 35 U.S.C. 103(a) as being anticipated by Lian, et al. in view of Jaster, et al. In response, Applicants have cancelled claims 24, 27, and 30 rendering the rejection moot.

Allowable Claims

In the office action, the Examiner states that "[c]laim 1 would be allowable if amended to remove the reference to the phase changed device; the provision of a segmented axle for the pump and fan with a gear engaged between them to provide different rotating speeds is not believed to be taught or suggested in the art." In response, applicants have amended claim 1 in accordance with the Examiner's statement and have removed the reference to the phase change device.

Claim 1, as amended, is directed toward an integrated fan pump comprising a housing for supporting the integrated fan pump. The housing has a rectilinear configuration. The invention includes a fan coupled to the housing. The fan has a fan head with a fan propeller coupled to the fan head. The fan propeller is selected from the group consisting of axial, tubeaxial, centrifugal, crossflow, backward-curved, forward-curved, airfoil, turbine, and straight radial. The invention includes a pump adapted to transfer a coolant from a coolant inlet to a coolant outlet. An external geometry of the pump is

adapted to be sufficiently compact such that gas flow through the fan and around the pump is substantially unimpeded by the pump. The gas flow moves from a gas flow inlet in a substantially straight, unchanged direction to a gas flow outlet. The pump has a pump head. The invention includes a pump impeller coupled to the pump head. The pump impeller is selected from the group consisting of axial propeller blade, straight radial blade, centrifugal blade, backward-curved blade, forward-curved blade, and turbine blade. The invention includes an axle having a first axle segment coupled to the fan head and a second axle segment coupled to the pump head. A mechanical gear is coupled to the first axle segment and the second axle segment. The mechanical gear is configured to rotate the first axle segment at a different rate than the second axle segment. The invention includes an expansion tank coupled to the pump, a gas-release valve coupled to the expansion tank, and a liquid seal formed between the fan head and the pump head proximate to the axle. The liquid seal includes a material selected from the group consisting of nitrile, polyacrylate, ethylene propylene, chloroprene, fluoro, silicone and butyl rubbers. The invention includes a heat source connected to the coolant outlet of the pump, and a heat exchanger coupled to the expansion tank. The heat exchanger includes a plurality of disc-shaped fins and is coupled to the heat source, uses heat conduction and forced convection to transfer heat from the heat source to the coolant, and is directly mounted to a surface of the fan. The invention includes an electrical drive mechanism. The electrical drive mechanism is a DC brushless motor and includes a first magnet coupled to the pump. The first magnet has a disc shape. The electrical drive mechanism includes a second magnet coupled to

the fan. The second magnet has a disc shape. The first magnet and the second magnet are substantially collinear. The electrical drive mechanism further includes a magnetic coil disposed between the first magnet and the second magnet. The magnetic coil has two solenoids. The electrical drive mechanism is configured to simultaneously drive the fan and the pump and has a rotational rate in the range of 2000 to 3000 rpm and the pump has a pump flow rate in the range of 5 cc/sec to 10 cc/sec and rotates the fan and the pump with respect to the housing.

Claim 1, as amended, is believed to patentably distinguish over the prior art references. None of the references of record taken singularly or in combination teach an integrated fan pump configured in the manner as claimed. Furthermore, new dependent claims 34-37 are believed to be in condition for allowance as they depend from what is believed to be an allowable base claim.

Conclusion

Applicants believe that all information and requirements for the application have been provided to the USPTO. If there are matters that can be discussed by telephone to further the prosecution of the Application, Applicants invite the Examiner to call the undersigned attorney at the Examiner's convenience.

The Commissioner is hereby authorized to charge any fees due with this Response to U.S. PTO Account No. **17-0055.**

Respectfully submitted,
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